Methods of Teaching Biological Sciences
[100 Instructional Hours – 100 Marks]

Objectives:
This course will enable the student teachers to:

1. explain the concept of science
2. appreciate the contributions of scientific institutions
3. explain the aims & objectives of teaching biological sciences
4. describe the competencies of biological science teacher
5. recognize the recommendations of commissions & policies on science teaching
6. develop the skill of writing unit & lesson planning
7. differentiate the relative advantages of methods of teaching biological sciences
8. develop the various skills of microteaching technique
9. explain the use of various teaching learning material
10. understand the concept of biological sciences curriculum
11. describe the planning of science laboratories
12. develop the skill of constructing test items
13. recognize the relative advantages of resources for teaching biological sciences

Course Content:

**Unit I: Introduction to Science** 8 Hours
1.1: Meaning and Scope of Science
1.2: Structure of Science
1.3: Characteristics & Functions of Science
1.4: Contributions of Scientific Institutions – Centre for Cellular & Molecular Biology (CCMB); National Institute of Nutrition (NIN); International Crops Research Institute for Semi-Arid Tropics (ICRISAT); National AIDS Control Organization (NACO)

**Unit II: Aims & Values of Teaching Biological Sciences** 8 Hours
2.1: Aims of Teaching Biological Sciences
2.2: Values of Teaching Biological Sciences
2.3: Correlation of Biological Sciences with other School Subjects
2.4: Competencies of Biological Sciences Teacher

**Unit III: Objectives of Teaching Biological Sciences** 12 Hours
3.1: Meaning and Importance of Objectives
3.2: Bloom’s Taxonomy of Educational Objectives
3.3: Instructional Objectives & Specifications
3.4: Recommendations of Commissions & Policies on Aims & Objectives of Science Teaching

**Unit IV: Methods of Teaching Biological Sciences** 15 Hours
4.1: Lecture Method; Lecture-cum-Demonstration Method
4.2: Scientific Method (Inductive & Deductive)
4.3: Project Method  
4.4: Laboratory Method  
4.5: Microteaching Technique  

Unit V: Planning for Teaching Biological Sciences 11 Hours  
5.1: Year Plan  
5.2: Unit Plan  
5.3: Lesson Plan: Herbartian & Constructivist Approaches  
5.4: Learning Experiences  

Unit VI: Biological Sciences Curriculum 8 Hours  
6.1: Principles of Curriculum Construction  
6.3: Qualities of a Good Science Textbook  
6.4: Critical Analysis of a Secondary School Biological Sciences Textbook  

Unit VII: Biological Sciences Laboratories 10 Hours  
7.1: Importance of Practical Work in Biological Sciences  
7.2: Planning of Science Laboratories – Lecture Room-cum- Laboratory; All Purpose Laboratory; Mobile Science Laboratory  
7.3: Procurement, Care & Maintenance of Laboratory Equipment and Maintenance of Laboratory Registers  
7.4: First-Aid & Safety Measures  

Unit VIII: Teaching Learning Material 10 Hours  
8.1: Edgar Dale’s Cone of Experience  
8.2: Over Head Projector (OHP); LCD Projector; TV; Computer  
8.3: Charts; Models; Specimens; Activity Aids (Herbarium, Vivarium, Terrarium); Display Boards  
8.4: Improvisation of Teaching Aids  

Unit IX: Resources for Teaching Biological Sciences 6 Hours  
9.1: Science Club  
9.2: Science Fair & Science Exhibition  
9.3: Science Museum  
9.4: Science Library  

Unit X: Evaluation in Biological Sciences 12 Hours  
10.1 Concept of Test, Examination, Measurement, Assessment and Evaluation  
10.2 Evaluation – Meaning, Process, Types and Tools  
10.3 Qualities of a Good Test and Types of Tests  
10.4 Preparation of Scholastic Achievement Test (SAT) with Weightage Tables and Blue Print  
10.5 Analysis and Interpretation of Test Scores
References: